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DIPHTHERIA: PRIMARILY A LOCAL, SECOND-
ARILY A CONSTITUTIONAL DISEASE.

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PEPPER, 1893, says: "The majority of authors are still agreed in calling diphtheria a general or constitutional disease which develops a local lesion at some period of its course, though many are inclined to advance the opinion that in *exceptional* cases the local lesion may first appear."

Yeo, 1893, says: "It has been established that it (diphtheria) is primarily a local disease, a local infection, and that the constitution is secondarily affected by the absorption of toxic substances developed by the activities of a specific micro-organism at the seat of local infection."

Microscopy has been the principal means of real advancement in this subject, but there are more ways than one to arrive at a positive conclusion in the majority of cases. As an illustration we might allude to a case in which syphilis is suspected, the history obscure, the initial lesion not well marked, and the eruption so slight as not to have been noticed, and yet, later, symptoms manifest themselves of a serious character, which quickly yield to syphilitic treatment and to no other. In such a case we are justified in a diagnosis of syphilis.



By the same manner of reasoning we are sustained in the conclusion that diphtheria is primarily a local and secondarily a constitutional disease. In support of this claim I will briefly relate the following nine cases and the *treatment* or *not* of the *other* children in the families exposed.

FAMILY NO. I ; CASE I.—On November 22, 1892, I saw V. S., ten years of age, whose tonsils had been enlarged since infancy. I found the pharynx and tonsils inflamed and tumefied; the temperature 104° , the pulse 120, and the cervical glands enlarged. I pronounced the case one of tonsillitis, and ordered treatment accordingly. On the third day the symptoms were not being allayed and the child was in a stupor, with mouth-breathing. Inspection was made, and a diphtheric membrane was noticed on the tonsils and muscles of the pharynx. The membrane was well marked, as was also the peculiar musty and fetid odor of diphtheria. I immediately placed the patient on potassium chlorate, tr. ferri chloridi, and stimulants; I also used a spray of hydrogen dioxid and water, equal parts, in the throat and nose. The other rooms of the house were thoroughly fumigated with sulfur, and the two other children were separated from the patient. Communication between parents and children could not be prevented.

On the fourth day the temperature was 102° , the pulse 110, with complete obstruction in both nostrils, and in them membrane plainly visible. The foregoing treatment was continued for five weeks, except that as the case improved the H_2O_2 was diluted by four or five parts of water. The temperature ranged from 100.5° to 102° until convalescence became established.

CASE II.—Four days after the appearance of

membrane (seventh day of disease) in Case I, a sister, aged eight years, was taken with an inflammation of the pharynx and tonsils. The temperature was 104° , the pulse 120. On the second day whitish patches made their appearance, which on the third day developed into the diphtheric membrane with all the symptoms of diphtheria—mouth-breathing, enlargement of cervical glands, fetid odor, and stupor—the membrane in this case also reaching into the entire nasal cavity. On the first appearance of the disease the same treatment was begun as in Case I—potassium, iron, whiskey, and anti-septic spray—and continued to convalescence.

CASE III.—The youngest sister, aged six years, was taken with the same symptoms on the sixth day after the appearance of the membrane in Case I. The disease developed and was treated in the same way as in Cases I and II, to convalescence. Each child was treated, from the time of the commencement to dismissal, for about seven or eight weeks. All recovered, the symptoms never becoming graver than those of the first three days after the appearance of the membrane, except a sinking spell in the youngest about the fifteenth day. This was treated by increase in stimulants, the patient rallying in about eighteen hours.

FAMILY NO. 2; CASE IV.—October 21, 1893, J. W., aged eleven years, had been sick for three or four days when I was called. Examination of the throat revealed diphtheric membrane. The temperature was 103° ; the pulse 108; there were present cervical enlargement and all other symptoms of diphtheria. I fumigated the house with sulfur and excluded the other children from the patient's room. The same treatment was employed, except the whiskey, as in the three cases already narrated.

CASE V.—Four days later the younger brother,

aged four years, was taken ill with the disease. The same treatment was carried out.

CASE VI.—Two days later, or six days after the first case in Family No. 2, the next oldest boy contracted the disease. In Cases IV and VI the membrane formed in the nose also; in Case V it did not. The baby, nine months old, escaped. The disease was light, lasting only thirteen, ten, and fourteen days respectively. The same treatment was used.

FAMILY No. 3; CASE VII.—A. S., four years of age, was taken ill October 25, 1893. The temperature was 104° , the pulse 126, the pharynx red; there was stupor, cervical enlargement, and vomiting. I gave a cathartic with bismuth and carbolic acid. On the third day white patches appeared in the pharynx, which developed into well marked diphtheric membrane on the fourth day, with all the symptoms of diphtheria. I fumigated the house, and separated the child from the other two children, and with a second atomizer had their throats and noses sprayed twice daily with the same antiseptic, diluted with five parts of water. They escaped the disease, although Case VII was well marked. The same treatment was used as in the other cases reported, extending over a period of twenty-one days, with recovery.

FAMILY No. 4; CASE VIII.—V. G., ten years of age, was taken ill on October 30, 1893. She had been sick four days when I was called in. The diphtheric membrane was well developed in the nose and throat, as were all the symptoms of the disease. The temperature was 103° , the pulse 120. Iron, potassium, stimulants and the antiseptic spray were ordered. On the second day, the fifth of the disease, the temperature was 98° , the pulse 100 and feeble. I increased the stimulants. There were nausea and

vomiting. The temperature ranged from 97.5° to 100° until the thirteenth day, when the child became worse, the temperature 97.5° , the pulse 140 and feeble. I then gave digitalis. The membrane had now about cleared away; the child rallied for a few hours and died suddenly from heart-failure. The brother, two and one-half years old, was permitted to be in the same room all through the illness, but his throat was sprayed with a solution of H_2O_2 , 1 to 5, daily, without symptoms of the disease arising.

FAMILY NO. 5; CASE IX.—M. M., six years of age, on November 12, 1893, had been sick four days when I was called. I found diphtheric patches appearing, and the patient almost completely overcome by the intensity of the poison. I ordered stimulants, iron, potassium, and the spray. On the second day the membrane was well developed, but the symptoms were allayed, and continued so until the twelfth day of the disease, when the spray was left off and the patient became worse. The spray was recommenced, with alleviation of the symptoms, and was continued to convalescence.

Here we have nine well-marked cases of diphtheria, with one death—a mortality of about 11 per cent. Before using this treatment, with especial attention to the spray, I am ashamed to say the mortality of my cases was about 75 per cent., although I had used the potassium, iron, and stimulants, with other local applications mentioned, brushed or blown on the surface.

The result of the observations upon these cases points to the following conclusions:

1. Diphtheria is manifested locally first, the disease being often overlooked until the constitutional

symptoms appear, these being caused by the absorption into the system of the toxic albumin given off by the Klebs-Loeffler bacillus.

2. The bacilli forming the toxic albumin are located in the larynx, pharynx, or nose, because the symptoms of poisoning by them are allayed when the proper germicide is thoroughly applied to these mucous membranes.

3. Even if the bacilli are situated beneath the surface, a solution of H_2O_2 , and probably of other antiseptics, has the power of reaching them.

4. Constitutional symptoms appear to be prevented when the germicide is applied, at intervals of two hours, before absorption or secretion of the toxic albumin has taken place.

5. It seems clearly proved that the bacillus first attacks, at least in a large majority of cases, the membrane of the throat and nose exclusively, as those children exposed to the disease but whose noses and throats were treated with germicide daily during exposure, did not contract the disease, while those not so treated, except in one instance, did contract it.

6. Hydrogen dioxid, and probably mercuric chlorid, and some other germicides, in proper solution, have the power, when applied to the bacilli, to render them inactive and probably to destroy them, thus preventing secretion of the toxic albumin.

In support of this claim attention is called to Case IX. When the spray was left off on the twelfth day, at a time when the membrane had not entirely left the post-nasal space, there was a reappearance of the toxic symptoms. It might also

be well to state that in Case VIII the atomizer broke ten or twelve hours before death and the spray was not introduced well. In several cases now under my observation, with the same treatment, the same results are being obtained.

The number of cases here detailed may be too small to definitely prove the conclusions drawn, but they strongly support the position taken, and further observations in this line will likely establish the fact.

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